

**Patent Claims**

1. Method for recovery of gas from a process that operates with gas under pressure, for which gas is sent from a high-pressure container into a closed chamber in which the process takes place, whereby the gas is compressed in multiple compression stages for recovery and is fed back into the high-pressure container, characterized in that the gas is compressed directly from the pressure prevailing in the chamber, at least one additional compression stage being used when the pressure in the chamber drops below a limit value.

2. Method as claimed in Claim 1, characterized in that a multistage compressor or multiple compressors connected in series are used.

3. Method as claimed in Claim 1 or 2, characterized in that the individual compression stages are supplied [with gas] directly according to the falling evacuation pressure of the chamber.

4. Method as claimed in any one of Claims 1 through 3, characterized in that the gas with the highest compression capacity is compressed in the highest compression stage.

5. Method as claimed in any one of Claims 1 through 4, characterized in that the pressure in the chamber is between 6 and 60 bar at the beginning and the pressure in the high-pressure container is between 8 and 62 bar.

6. Method as claimed in any one of Claims 1 through 5, characterized in that nitrogen, argon, helium or other mixtures are compressed.

7. Device for recovering gas from a process that operates with gas under pressure, in which the gas is removed from a high-pressure container (1) and which is used in a closed chamber (2), characterized in that the chamber (2) communicates with at least two compressors (3, 4) connected in series, forming at least two compression stages, or

with each compression stage of a multistage compressor via connecting lines (10, 11) communicates directly without an intermediate storage, whereby the connecting lines (10, 11) include opening and closing overcurrent regulators (12, 13) or cut-off elements (6, 7) which are connected to a switching unit (8) which controls the cut-off elements, and whereby the highest compression stage (4) of the compressors connected in series or of the multistage compressor is connected to communicate with the high-pressure container (1).

8. Device as claimed in Claim 7, characterized by the fact that the switching unit (8) is connected to a pressure sensor (9) situated on the chamber (2).

9. Device as claimed in Claim 7 or 8, characterized by the fact that one or more compression stages include multiple compressors conducted in parallel.

10. Use of the method as claimed in any one of Claims 1 through 6 or use of the device as claimed in any one of Claims 7 through 9 in the quenching process in the heat treatment.

[see source for figures]

[Stufe = Stage]